



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Amended
#35

Application of:

Christian Tonna et al

Serial No. 09/220,462

Filing Date: December 23, 1998

Title: ELEVATOR DOOR SYSTEM

Commissioner for Patents
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P.O. Box 1450
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Docket: OT-4224

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Examiner: Steven B. McAllister

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Dear Sir:

APPEAL TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

PURSUANT TO 37 C.F.R. § 1.191

1. **REAL PARTY IN INTEREST**

The real party in interest is the assignee of all right, title and interest on this application, Otis Elevator Company, a New Jersey Corporation, having offices at 10 Farm Springs, Farmington, Connecticut 06032. The assignment of assignor's interest was recorded on April 9, 1999 at reel 9881, frame 0765.

2. **RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to appellant, the appellant's legal representative, or assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

3. **STATUS OF CLAIMS**

Claims 1 and 3-6 are canceled. Claims 2, 7-15 and 22-38 are withdrawn. Claims 16-21 are currently pending in this application. Claims 16 and 21 are rejected under 35 USC 103(a) as being unpatentable over Yoshikawa (JP-402081888) in view of Aulanko et al

(5,665,944). Claims 16, 17, and 21 are rejected under 35 USC 103(a) as being unpatentable over Yoshinobu (JP 4-06329375) in view of Aulanko et al and claims 18-20 are rejected under 35 USC 103(a) as being unpatentable over Yoshinobu in view Aulanko et al further in view of Tracey (5,701,973).

The rejections of claims 16-21 are appealed.

4. **STATUS OF AMENDMENTS**

No amendments to the claims were submitted by the Applicants subsequent to the Final Rejection, dated March 27, 2003.

5. **SUMMARY OF INVENTION**

Applicant's invention, as claimed in Claim 16, is directed to an elevator door system for opening and closing the elevator doors located on the front of the elevator car. A first and second sheave are located on the front face of the elevator car. A rope forms a closed loop around the first and second sheave and the door is attached to the rope. The door moves between an opened and closed position with the movement of the rope. A flat motor is integrated onto one of the sheaves for driving the rope and in turn driving the door.

The principle advantage of the invention of Claim 16 is to reduce car overhead by relocating the drive mechanism from the top of the car to the front face of the car. The relocation of the drive, as stated, reduces overhead, which allows for a reduction in required hoistway space and reduces hazards to mechanics who can now service the drive system without having to enter the hoistway and get on top of the car. Support for the invention of Claim 16 can be found on page 4, line 1 through page 6, line 4 and in figure 1.

The invention of claim 17 further defines the location of the drive motor as being located between a lower and upper edge of the elevator car.

The invention of claim 18 further defines the invention to include a header bracket located on the front face of the elevator car between the upper and lower edge of the elevator car and that the door includes a hanger located frontwardly of the front face of the elevator car and that the motor is located between the front face of the elevator car and the hanger.

The invention of claim 19 furthers defines the location of the header bracket as being located between a first and second sides of the elevator car and between the upper edge of the elevator car and the door and that the motor is mounted on the bracket.

The invention of claim 20 further defines the location of the motor as being generally adjacent a first side of the elevator car.

The invention of claim 21 further defines the rope as having an upper and lower portion and one door associated with the upper portion of the rope and another door associated with the lower portion of the rope such that first and second doors move in opposite directions relative to each other as the flat drive motor moves the rope.

6. **ISSUE**

(1) Whether Claim 16 and 21 are unpatentable over Yoshikawa in view of Aulanko et al?

(2) Whether Claims 16, 17 and 21 are unpatentable over Yoshinobu in view of Aulanko et al?

(3) Whether Claims 18-20 are unpatentable over Yoshinobu in view of Aulanko et al further in view of Tracey?

7. **GROUPING OF THE CLAIMS**

For the purposes of this Appeal;

The group of claims 16 - 21 stand and fall together.

8. **ARGUMENT**

(1) Whether Claim 16 and 21 are unpatentable over Yoshikawa in view of Aulanko et al?

Applicants respectfully submit that the Examiner has not met the burden of proof required to support a rejection under 35 U.S.C. § 103. When an application is submitted to the Patent and Trademark Office, case law dictates that 35 U.S.C. § 103 places the burden of proof on the PTO to establish a prima facie case of obviousness.¹ Once the prima facie case has been established, then the burden of going forward with the evidence to rebut the prima facie case shifts to the applicant. Only the burden of going forward with evidence to rebut shifts to the applicant, however. The burden of persuasion remains with the PTO.

Further, in order to support a prima facie obviousness type rejection, the Examiner must take into account all the limitations in the rejected claim², including any limitations expressed using functional language³. Further, the obviousness must be determined based on

¹ In re Fritch, 23 U.S.P.Q. 2d 1780 (Fed. Cir. 1992), In re Piasecki, 745 F.2d 1468, 1471-1472, 223 U.S.P.Q. 785, 787-788 (Fed. Cir. 1984).

² Carl Schenck, A.G. v. Nortron Corp., 713 F.2d 782, 218 U.S.P.Q. 698 (Fed. Cir. 1983); Carman Industries v. Wahl, 724 F.2d 932, 220 U.S.P.Q. 481 (Fed. Cir. 1983).

³ Lewmar Marine, Inc. v. Barient, Inc., 827 F.2d 744, 3 U.S.P.Q.2d 592 (Fed. Cir. 1983).

the claimed subject matter as a whole, including any results and advantages produced by the claimed subject matter⁴. In order to use a combination of references to establish a prima facie case of obviousness, there must be some teaching, suggestion or incentive to support the specific combination of references⁵.

Claims 16 and 21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshikawa in view of Aulanko et al.

The Examiner cited Yoshikawa for teaching a car, at least one elevator door on the front face, first and second of an elevator car for movement between open and closed positions, first and second sheaves mounted on the front face of the car comprising the vertical portion of the header, a rope forming a closed loop around the sheaves wherein the door is attached to the rope and a drive motor on the front portion of the car coupled to the elevator door.

The Examiner cites Aulanko et al for teaching a flat motor integrated onto a sheave and that it would have been obvious to one of ordinary skill to modify the drive apparatus of Yoshikawa by adding a flat motor to integrated onto one of the sheaves.

Yoshikawa does not teach a flat motor integral to a sheave located on the front face of an elevator car. The motor 9a is located on top of the elevator car, requiring increased clearance at the top of the hoistway. Applicants' invention allows the motor to be removed from the top of the car reducing the required clearance at the top of the hoist way.

Furthermore, Applicants respectfully disagree because there is no motivation to modify the references (MPEP 2143.01). Aulanko et al describes an elevator machinery comprising a motor and a traction sheave located in the hoistway, designed to move the elevator ropes wherein the two traction sheaves provided are attached to a rotor by means of fixing elements.

There is no suggestion by Aulanko et al or Yoshikawa that the drive system of Yoshikawa consisting of a motor located on the top of the car, a first drive belt and a intermediate drive gear can be replaced by the elevator drive motor of Aulanko et al. Assuming that Aulanko et al could be combined with Yoshikawa there is only a suggestion that the drive motor, located on top of the car, and intermediate gear could be replaced.

⁴ Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 7 U.S.P.Q.2d 1315 (Fed. Cir. 1988); In re Chupp, 816 F.2d 643, 2 U.S.P.Q.2d 1437 (Fed. Cir. 1987); Fromson v. Advanced Offset Plate, 755 F.2d 1549, 225 U.S.P.Q. 26 (Fed. Cir. 1985).

⁵ In re Geiger, 815 F.2d 686, 2 USPQ2d 1276 (Fed. Cir. 1987); ACS Hospital Systems Inc. v. Montefiore Hospital, 732 Fed.2d 1572, 221 USPQ 929 (Fed. Cir. 1984).

For the foregoing reasons, reconsideration and withdrawal of the rejection of claim 16 as obvious over Yoshikawa in view of Aulanko et al and Kershaw et al is respectfully requested.

Since claim 21 depends directly from claim 16, is patentable for the same reasons. Therefore, reconsideration and withdrawal of the rejection is respectfully requested.

(2) Whether Claims 16, 17 and 21 are unpatentable over Yoshinobu in view of Aulanko et al?

The Examiner rejected claims 16, 17 and 21 under 35 USC 103(a) as being obvious over Yoshikawa (JP 402081888) in view of Aulanko et al (5,665,944) and Kershaw et al (4,884,844).

As stated above, the Examiner cited Yoshikawa for teaching a car, at least one elevator door on the front face, first and second sheaves disposed to the first and second sides of the door opening, a rope forming a closed loop around the sheaves wherein the door is attached to the rope and a drive motor on the front portion of the car coupled to the elevator door. The Examiner cited Aulanko et al. as teaching a flat motor integrated onto a sheave and further states that it would have been obvious to one of ordinary skill in the art to modify the apparatus of Yoshikawa by adding the flat motor onto one of the sheaves shown in Aulanko et al. The Examiner further cites Kershaw et al. as inherently teaching a flat motor disposed on the front face of an elevator car. The Examiner states that it would have been obvious to one skilled in the art to further modify the apparatus of Yoshikawa by using the motor of Kershaw et al. in order to reduce the size of the motor to make the required torque.

Applicants respectfully disagree because there is no motivation to modify the references (MPEP 2143.01). Aulanko et al describes an elevator machinery comprising a motor and a traction sheave designed to move the elevator ropes wherein the two traction sheaves provided are attached to a rotor by means of fixing elements.

There is no suggestion by Aulanko et al or Yoshikawa that the drive system of Yoshikawa consisting of a motor, a first drive belt and an intermediate drive gear can be replaced by the elevator drive motor of Aulanko et al. Assuming that Aulanko et al could be combined with Yoshikawa there is only a suggestion that the drive motor and intermediate gear could be replaced.

Kershaw et al teaches a double stage taumel gear reduction unit used in conjunction with a flat motor for positioning a seat back of an automotive car seat. Again there is no motivation to replace the entire drive system of Yoshikawa to arrive at the subject invention.

Kershaw et al only suggests that the motor and intermediate gear could be replaced with an integrated motor and belt driver.

For the foregoing reasons, reconsideration and withdrawal of the rejection of claim 16 as obvious over Yoshikawa in view of Aulanko et al and Kershaw et al is respectfully requested.

Since claims 17 and 21 depend directly from claim 16, they are patentable for the same reasons. Therefore, reconsideration and withdrawal of the rejection is respectfully requested.

(3) Whether Claims 18-20 are unpatentable over Yoshinobu in view Aulanko et al further in view of Tracey?

The Examiner rejected claims 18-20 under 35 USC 103(a) as being unpatentable over Yoshinobu in view of Aulanko et al as applied to claim 17 above and further in view of Tracey (5,701,973). The Examiner cites Tracey as showing a header mounted between the top of the car and the top of the door opening and that it would have been obvious to modify the apparatus of Yoshinobu by adding the header bracket of Tracey.

Applicants respectfully disagree. As discussed above Applicants believe that claim 16 is allowable and therefore claims 18-20, which depend indirectly therefrom are also patentable.


Furthermore Yoshinobu clearly shows a motor located on top of the car. As discussed above there is no motivation to combine Aulanko et al and Yoshinobu therefore there is no motivation to combine Tracey and Yoshinobu because the drive of Yoshinobu must be located on top of the car.

Therefore, Applicants respectfully request withdrawal of the subject rejection and allowance of claims 18-20.

CONCLUSION

As Applicants have traversed each and every rejection raised by the Examiner, it is respectfully requested that the rejections be reversed and the rejected claims be passed to issue. Please charge any additional fees or credit overpayment to Deposit Account No. 15-0750, Order No. OT-4224.

Respectfully submitted,
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9. APPENDIX I

Claims involved in the Appeal:

16. An elevator door system comprising:
 - an elevator car having a front face defining a door opening;
 - at least one elevator door coupled to the front face of the elevator car for movement between an open position exposing the door opening and a closed position covering the door opening;
 - a first sheave and second sheave disposed on the front face of the elevator car;
 - a rope forming a closed loop about the first and second sheaves wherein the door is attached to the rope; and
 - at least one flat drive motor integrated onto one of the sheaves such that the drive motor is drivingly coupled to the rope for moving the elevator door between the open and closed positions.
17. An elevator door system defined in claim 16, wherein the flat drive motor is mounted on the front face of the elevator car and disposed between a lower edge and an upper edge of the elevator car.
18. An elevator door system as defined in claim 17, and further including a header bracket mounted on the front face of the elevator car between the lower edge and the upper edge of the elevator car, and wherein the elevator door includes a hanger spaced frontwardly of the front face of the elevator car, and the flat drive motor is disposed forwardly of the front face of the car and rearwardly of the hanger.
19. An elevator door system as defined in claim 18, wherein the header bracket is disposed below the upper edge of the elevator car and generally above the door opening, the header bracket extending generally between first and second sides of the elevator car, and wherein the flat drive motor is mounted on the header bracket.
20. An elevator door system as defined in claim 18, wherein the flat drive motor is disposed generally adjacent to a first side of the elevator car.
21. An elevator door system as defined in claim 16 wherein the rope defines upper and lower portions each extending between the first and second sheaves, and further comprising

another door attached to the rope, one door attached to upper portion of the rope, and the other door attached to a lower portion of the rope such that the doors move in opposite directions relative to one another as the flat drive motor moves the rope about a portion of the closed loop.